

REMARKS

Claims 1, 3-6, 9, 12-16, 19, 22-26, 29, 32, 34-37 and 40 are pending in this application. By this amendment, claim 9 is amended to place it in condition for allowance.

No new matter is added by this Amendment. Support for the language added to claim 9 can be found in claims 1 and 6.

I. Allowable Subject Matter

Applicant notes with appreciation that claims 9, 19, 29 and 40 are allowable. Accordingly, Applicant has amended claim 9 to be in independent form. Claim 9 should now be in condition for allowance.

II. Claim Objection

Claim 6 was objected to as allegedly being in improper dependent form. In particular, the Patent Office alleges that claim 3, upon which claim 6 depends, identifies that the electron donating composite compound is a silane or disilazanes. Applicant strenuously disagrees with this allegation.

Claim 3 recites that said rare earth complex and said reducing agent constitute an electron-donating composite compound. The Patent Office has apparently referred to the limitation of claim 4 (which identifies the electron donating composite compound as a silane or disilazane), not claim 3. Claim 6 properly depends from claim 3.

Thus, claim 6 is in proper dependent form. Reconsideration and withdrawal of the objection are respectfully requested.

III. Rejections Under 35 U.S.C. §103(a)

A. JP '861

Claims 1, 3, 4, 12-14, 32 and 34-35 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over JP 09-227861 ("JP '861"). This rejection is respectfully traversed.

According to the Patent Office, JP '861 teaches a europium (III) phenanthroline complex in an ORMOSIL solgel matrix treated with an organic silane. The Patent Office asserts that the organic silane is a reducing agent. Applicant respectfully disagrees with these allegations.

Contrary to the Patent Office's assertions, the organic silane taught by JP '861 cannot act as a reducing agent because the organic silane contains an S-H group. As a result, the organic silane taught by JP '861 does not have the ability to reduce the europium (Eu^{3+}) ion into a divalent state.

In contrast, a reducing agent is required in the medium of present claim 1. A reducing agent such as, for example, a silane compound or disilazane compound, still exists in a matrix after the sol-gel reaction process occurs. Therefore, the reducing agent has the ability of inducing the photochemical hole burning effect. See, for example, paragraphs 23 and 29-32 of the present specification.

Accordingly, Applicant submits that JP '861 does not teach or suggest a photochemical hole burning medium, comprising a material in which a rare earth complex and a reducing agent are dispersed in a solid matrix as recited in claim 1. Reconsideration and withdrawal of the rejection are thus respectfully requested.

B. JP '037 and JP '861

Claims 1, 3-5, 12-15, 32 and 34-36 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over JP 2000-345037 ("JP '037") and JP '861. This rejection is respectfully traversed.

JP '037 does not overcome the deficiencies of JP '861. In particular, JP '037 does not teach or suggest a photochemical hole burning medium, comprising a material in which a rare earth complex and a reducing agent are dispersed in a solid matrix as recited in claim 1.

Furthermore, JP '037 converts a Si-O-H group into Si-O-Si-R₃ group to increase the effect of the optical quenching. This depends on the O-H expansion and contraction from the Si-O-H group that exists in the formed matrix complex. In contrast, the invention recited in claim 1 forms a hole by irradiating a laser under a condition that includes a reducing effect existing in the matrix and the ability of stabilizing Eu²⁺ derived from the rare earth complex.

For the foregoing reasons, Applicant submits that claims 1, 3-5, 12-15, 32 and 34-36 are patentable over JP '037 and JP '861. Reconsideration and withdrawal of the rejection are thus respectfully requested.

C. JP '037 and JP '861, in view of Tsuboi and/or Ueda

Claims 1, 3-5, 12-15, 32 and 34-36 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over JP '037" and JP '861, further in view of Tsuboi et al, "synthesis and fluorescence properties of...", J. Am. Ceram. Soc., Vol. 81(5), pp. 1197-1202 ("Tsuboi") and/or Ueda et al., "Preparation and Persistent Spectral Holeburning properties of Rare Earth Complex Dispersed in Silica Composite Materials," Kidorui Vol. 36, pp. 262-263 (2002) ("Ueda"). This rejection is respectfully traversed.

Tsuboi was introduced by the Patent Office as allegedly teaching analysis of the emission spectra of Eu crown ether in solgel matrices at room and low temperatures, while Ueda was introduced as allegedly teaching spectral hole burning at 77K. Even if these alleged teachings are accepted, neither Tsuboi nor Ueda overcome the deficiencies of JP '037 and JP '861.

In particular, none of the references, in combination or alone, teach or suggest a photochemical hole burning medium, comprising a material in which a rare earth complex and a reducing agent are dispersed in a solid matrix as recited in claim 1.

Accordingly, Applicant submits that claims 1, 3-5, 12-15, 32 and 34-36 are patentable over JP '037, JP '861, Tsuboi and Ueda, either in combination or alone. Reconsideration and withdrawal of the rejection are thus respectfully requested.

**D. JP '037 and JP '861, in view of Tsuboi and/or Ueda,
and further in view of Che or EP '428**

Claims 1, 3-6, 12-16, 22-26, 32 and 34 -37 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over JP '037" and JP '861, further in view of Tsuboi and/or Ueda, and further in view of U.S. Patent No. 3,810,674 ("Che") or EP 0263428 ("EP '428"). This rejection is respectfully traversed.

Che was introduced by the Patent Office as allegedly teaching various precursors used to form solgel glasses, while EP '428 was introduced as allegedly teaching silicon oxides with titanium or zirconium oxides formed using solgel methods. Even if these alleged teachings are accepted, neither Che nor EP '428 overcome the deficiencies of JP '037, JP '861, Tsuboi and Ueda.

In particular, none of the references, in combination or alone, teach or suggest a photochemical hole burning medium, comprising a material in which a rare earth complex and a reducing agent are dispersed in a solid matrix as recited in claim 1.

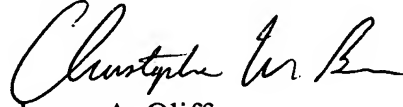
Accordingly, Applicant submits that claims 1, 3-6, 12-16, 22-26, 32 and 34 -37 are patentable over JP '037, JP '861, Tsuboi, Ueda, Che and EP '428, either in combination or alone. Reconsideration and withdrawal of the rejection are thus respectfully requested.

IV. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1, 3-6, 9, 12-16, 19, 22-26, 29, 32, 34-37 and 40 are earnestly solicited.

Should the examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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